

Less Than a Minute or Two Loren F. Hiratzka

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Less Than a Minute or Two

Loren F. Hiratzka, MD, FACS, FACC, FAHA

“Prompt and appropriate imaging saves lives every day. With our dedication the medical, scientific and lay communities alike can successfully bring aortic dissection into the light of day.”

—Amy Yasbeck, actress, author, and widow of John Ritter (personal communication, April 18, 2011)

The American College of Cardiology Foundation and the American Heart Association have jointly produced clinical practice guidelines for diagnosis and treatment of cardiovascular diseases since 1980. Writing committees are charged with assessing the evidence as an independent group of authors and with developing, updating, or revising recommendations for clinical practice. Practice guidelines are intended to assist healthcare providers in clinical decision making by describing a range of generally acceptable approaches for diagnosis, management, and prevention of specific diseases or conditions. Guideline recommendations reflect a consensus of the writing committee, are generally based on a thorough review of the available and current scientific evidence, and are intended to improve patient care. The areas where additional data are needed to better inform patient care are identified. Even in the absence of a strong evidence base, writing committees develop consensus-based recommendations where such recommendations are considered to be important.

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In 2010, guidelines for the diagnosis and management of patients with thoracic aortic disease¹ were published as a collaborative effort by 17 writing committee members representing 10 cosponsoring medical specialty organizations. One of the critical issues noted was that a large proportion of patients with acute aortic dissection are subject to missed or delayed detection of this catastrophic disease state. Many of these patients present with atypical symptoms and findings, making the diagnosis even more difficult. The writing committee, in particular Dr Luke Hermann, constructed a series of tables (Figure) of high-risk conditions, high-risk pain features, and high-risk examination features, and a diagnostic algorithm was designed to direct healthcare providers to

promptly perform aortic imaging to improve early detection and diagnosis of acute aortic dissection. The guideline writing committee recognized that this systematic approach had not been tested in a clinical situation.

Rogers et al,² including 5 members of the guideline writing committee, now have applied the suggested tables and diagnostic algorithm to 2538 patients in the International Registry of Acute Aortic Dissection, with some minor modifications. Of the 13 risk factors noted in the Figure, connective tissue disease as listed under “high-risk conditions,” and the subset of “sharp or stabbing quality” as a “high-risk pain feature” were not included. When this population of patients known to have acute aortic dissection was examined for the remaining 12 available clinical risk markers at initial presentation, 95.7% had one or more clinical risk markers, 83.6% had at least 2, and 46.3% had 3 or 4. An Aortic Dissection Detection risk score of 0 (low risk), 1 (intermediate risk), and 2 or 3 (high risk), was determined by the presence of any high-risk condition, pain feature, and/or examination feature for each patient at initial presentation. With use of this risk score, 4.3% were found to be low risk, 36.5% were intermediate risk, and 59.2% were high risk. Of the patients scored as low risk, 48.6% of those having a chest x-ray had a widened mediastinum noted initially. Thus, the overall sensitivity for detection of acute aortic dissection at initial presentation with use of the suggested tables and diagnostic algorithm was 95.7%. Whether the addition of connective tissue disease as a “high-risk condition” and/or “sharp or stabbing quality” as a “high-risk pain feature” would have further increased the sensitivity is unknown.

Furthermore, both the sensitivity and specificity of this approach to a real-world emergency department situation is unknown. The authors point out the relative infrequency of acute aortic dissection (estimated at 10 000 cases annually) in comparison with the total emergency department visits (estimated at 100 000 000 annually) of which a large percentage may be for chest, back, or abdominal pain, syncope, or complaints that could be due to arterial malperfusion (stroke, myocardial infarction, limb ischemia, mesenteric ischemia), but not related to acute aortic dissection.² The importance of determining the specificity of this approach lies in the need for imaging studies, most often computed tomography scans, to establish the diagnosis, and the downstream risk of radiation exposure as well as the cumulative cost of such studies. Low diagnostic specificity could translate into a large percentage of negative radiographic studies.

Additional clinical factors and screening tests may emerge to be inserted into the tables and algorithms. Additional clinical studies focused on the utility of the aortic dissection risk factor tables and algorithm are clearly needed. Of the 14 guideline recommendations contained in the emergency department diagnostic section, 7 are class I/level of evidence B,

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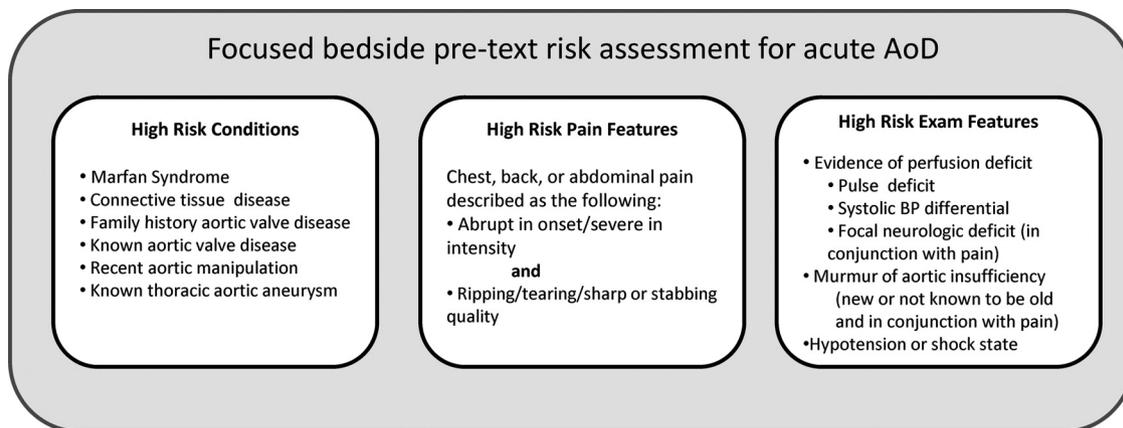


Figure. High-risk conditions, pain features, and examination features for acute aortic dissection. AoD indicates acute aortic dissection; BP, blood pressure. Adapted from Hiratzka et al.¹

5 are class I/level of evidence C, and 2 are class III/level of evidence C. Rogers et al are to be commended for quickly adding to our knowledge base in this critical area. The guideline writing committee looks forward to the availability of additional evidence on which future recommendations can be more precisely based.

Rogers et al² point out that acute aortic dissection is suspected in less than half of patients ultimately diagnosed with this condition, leading to greater morbidity and mortality. To improve on this rather dismal rate, we encourage practitioners to quickly determine the presence or absence of each of the high-risk conditions, pain features, and examination features, and proceed to aortic imaging as directed. It may take less than a minute or two to complete this checklist. We hope that this will be time well spent leading to earlier diagnosis of acute aortic dissection.

Disclosures

None.

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KEY WORDS: acute aortic syndrome ■ aortic dissection ■ chest pain diagnosis ■ diagnosis ■ emergency department